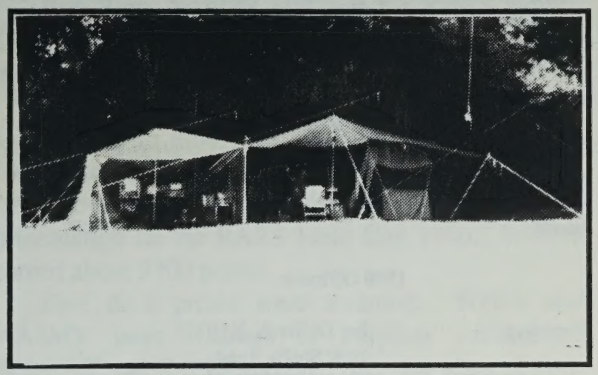
The RARS EXCITER

Issue 245 - August, 1990 - Club Repeaters: 146.04/64 , 223.04/224.64 , & 444.5/449.5

"Boat Anchor" Bob NA4G operating QRP CW



"Tents" operating conditions at Delta base.

One Fine Field Day!

Field Day is the one event of the year that amateurs in the United States get to practice emergency communications operation without property or life being in jeopardy (at least we hope those erecting and climbing temporary towers came to no harm).

Camp Butner National Guard Training Camp was the site of the 1990 RARS Field Day. Co-chairmen Tim Buehlman, N4IQA and Bob Keys, NA4G organized this year's event which hosted up to 30 operators (including one from New Zealand) and an unknown number of guests over the operating period beginning Saturday June 23rd and ending Sunday afternoon. Operating activities to suit all levels of experience were available under the calls of N4PHJ (Novice/Tech station), N4TH (rf output greater than 5 Watts), and W4DW (QRP).

Antenna construction and placement was again the driving force behind the QRP operating stations. Hand turned log periodic beams were used on the higher frequencies while fixed wire delta loop arrays and dipoles were used for the lower frequencies. Gain is everything to a flea power signal.

Emergency power in several forms was used to garner the maximum number of points. Three military surplus generators provided the distributed power grid for operating radios, charging batteries, and nighttime lighting. Individual generators and a high point earning solar power array provided the remaining power needed.

An evening of fellowship and too much good food was shared among the participants and guests at the Saturday evening pot-luck dinner.

All this and an unofficial point count of 1940 points! Not bad for weekend of fun!

de KM4BU

Inside: Repeater Controller/Autodialer Issue
Mobile HF, Real Ham Radio,
Meet the RARS 2-meter Repeater,
And More!

The Raleigh Amateur Radio Society, Inc. (RARS), founded in 1969, has grown to be one of the premier radio clubs in North Carolina. Current membership exceeds 370.

The objectives of the club are to promote world wide friendship through Amateur Radio; to be of public service by providing radio communication in times of disaster, emergency, or civic need; to educate members in radio technique, and to assist in obtaining Amateur Radio licenses.

All persons interested in Amateur Radio, currently licensed or not, are eligible to apply for membership to the club.

Dues to the club are $10.00 per year (which runs from July 1 to June 30). Applications for membership may be obtained from any of the officers named below; from the newsletter editor, named on the facing column; or at any RARS Meeting.

Club meetings are held the first Wednesday of every month, 7:30 PM, at the Raleigh YMCA, 1601 Hillsborough St.

In addition to the many social and special events, the club sponsors a 2 m repeater, W4DW, on 146.04/64 MHz, and WA4PEN on 223.04 / 224.64 MHz, & 444.5 / 449.5. All repeaters cover Raleigh, and most of the surrounding Wake County area. Auto-patch privileges are available on W4DW to duly licensed RARS members. Future plans call for additional repeaters on the 50 MHz amateur bands

1990 Officers:

President:	Jim DuBreck, N4BYO 1209 Shelly Road Raleigh, NC 27609 781-9437
Vice President:	Anita Kellum, KC4AQB 208 Chatterson Drive Raleigh, NC 27615 846-7455
Secretary:	Ronny Reams, WA4MJF 3509 Rolesville Road Wendell, NC 27591 266-4434
Treasurer:	Tim Buehlmann, N4IQA 1314 Chaney Rd. Raleigh, NC 27606 851-7738

The EXCITER is published monthly by the Raleigh Amateur Radio Society, and is mailed at no cost to its members.

Letters to the Editor, technical articles, items of interest to the ham community and guest editorials are actively solicited.

Any article published in the EXCITER does not necessarily represent the views of, the Officers, Board of Directors, Editor, or Society Membership, nor does publication thereof represent concurrence by the Officers, Board of Directors, Editor, or Society membership with the contents of the article.

Articles will be printed at the discretion of the Editor, and no article will be published unless it is accompanied by the name(s) of the person(s) submitting the article.

All copy must be in the hands of the editor by the end of the Board of Director's meeting on the third Wednesday of each month. Articles submitted for publication may be hand or type written, an ASCII file on disk (IBM or APPLE format), transmitted electronically via telephone modem, or on the ham bands using RTTY or PACKET.

Ham related items for sale by the members will be advertised without charge for one issue, but may be re-submitted as often as desired. These ads must be non-commercial in nature.

Commercial ads will be run in return for the following donations to the club:

	Single Issue	Full Year
Business Card	$5.00	$25.00
Quarter Page	$10.00	$50.00
Half Page	$20.00	$100.00
Full Page	$30.00	$150.00

(Commercial ads must be of "camera-ready quality," and obviously can not be sent via ham bands.) Due to the reprographic process used, no color copy can be accepted.

Advertisers are guaranteed a minimum monthly mailing of 400 copies.

Editor: Vince Yakamavich, AA4MY
220 Carriage Trail
Raleigh, NC 27614
847-8512 (Home)
850-5390 (Office)

Filling in for the vacationing AA4MY is
Walter Price KM4BU

Amateur Radio News Service

AMSAT

Minutes of the Meeting

The regular monthly meeting of the Raleigh Amateur Radio Society was held July 4th, 1990 at the YMCA on Hillsborough Street. President Jim DuBreck called the meeting to order and welcomed the 41 members and 4 guests.

Cole Thacher, W1HZQ was elected to fill the post of chairman for the 1991 RARSfest (hamfest) AB4DQ made the acceptance speech for Cole.

Tim Buehlman, N4IQA reported on the Fiscal Year 1990 deficit in the RARS budget and encouraged all to renew their RARS membership ($10.00 annually or $15.00 for the family). Tim also explained the $7.00 vote for the ACC850 controller for the two-meter repeater (See Repeater Controller Page X) There will be a fee for the autodialer service in later years, but the amount has yet to be determined. As of July 4th, there are 387 members of RARS, Inc.

President Jim announced that Jeff Parker, WA1WXL, has resigned as the two meter repeater SIG chairman. The board appointed Chuk Gleeson, KB4MDZ to fill the unexpired term.

Vince Yakamavich, AA4MY spoke about an article in the W5YI Report that indicated that the FCC is waiving the 13 and 20 words per minute code requirements for handicapped applicants.

Bob Rinn, N4VQN said that the RARS Novice Class would start 17 JUL at Athens Drive HS (note:now cancelled and rescheduled for the fall).

Jim Mulligan, N4ODA presented certificates of appreciation to those who provided communications for a bicycle race.

Bob Keys, NA4G presented a video tape and slide presentation on the RARS Field Day 1990. W4DW earned about 9700 points.

Five door prizes were awarded. N1BA and AA4MY were winners of burpless cucumbers. WA4JWE and K4FEP received one year subscriptions to World Radio. AB4OZ received a gift certificate for Sears. Meeting Adjourned and "Eyeball" QSOs were held.

Ronnie Reams WA4MJF

H.F. Mobile Considerations

Gordon West, WB6NOA

There is little that beats the excitement of working Australia, mobile, while stuck in traffic, or cruising down the highway. It's also fun to exchange weather reports with mobile stations 3,000 miles away too. Putting a 100 watt HF rig mobile is relatively easy if you follow some very important considerations — and here are the points to remember.

Which rig? Take your pick — ICOM, Kenwood, or Yaesu — they are all excellent for mobile use. Don't consider, even for a second, any older rig that uses tubes. They'll drain your battery dry in hours. Tube rigs for the mobile are just not practical. And, hey, don't forget about those 25 watt 10 meter transceivers from Uniden and Radio Shack — they are terrific performers too!

Big power leads! You can't run a mobile, 100 watt rig off your fuse block or cigarette lighter! You must use a minimum of #8 AWG wire, going directly to your battery. Go through the knock out plugs on the fire wall. Make absolutely sure you use two 20 amp fuses in parallel off the red lead, right at the battery positive post. This will keep you from burning up your car (!) in case the wires you add should short out by the fire wall.

A foil ground is a must to keep the RF out of the modulator stage of your mobile solid state rig. Round ground wires are out. Use copper foil, or copper braid. Ground the tail of your radio to the metal chassis of your vehicle.

See Mobile HF page 4

Mobile HF (Continued from page 3)

Use good coax for your antenna system. You don't need to go to RG-213, but you should use "non-contaminating" RG-8X with a dielectric that is non-foam. Be sure the center conductor is stranded to prevent a fracture. Run the coax through the back seat, into the trunk, and then figure out how you're going to get your big mobile antenna.

Place the HF base section as high up as possible for a good mobile antenna installation. Trunk lid mounts work surprisingly well if you guy your mobile antenna with monofilament fishing line. If more than half your mobile whip is in close proximity to the trunk, performances will suffer, and your SWR will be sky high.

Best mobile antenna? Top loading is best for getting the signal up and away from the chassis. Helical loading is a good way to minimize IR losses. A good 6 foot antenna, one per band, will give you great mobile DX.

Seal the base of your antenna mount so water won't creep in. All sorts of goo are available to keep that back connection dry. Most mobile installations go sour at the point where the coax meets the exposed antenna connection.

Finally, tune your mobile antennas precisely to your operating frequency. Don't rely on a built-in antenna tuner to match an otherwise unmatched mobile antenna. If your mobile antenna won't match, find a new location for your mount, and get the base up as high as possible for minimum SWR.

Now enjoy mobile HF operation. On 10 meters alone, with just a 25-watt Radio Shack set, you can easily work Europe early in the morning, South America in the afternoon, and talk to the gang "down under" as you head home on the [I-40] parking lot. One thing for sure, going mobile on high frequency will sure keep your commute from being dull. Hope to hear you on the bands, mobile, soon.

from West Coast ARC Intermod, *3/90, via ARNS*

Congrats:New Calls

Terri Jaskolka received N4ZUD
Cindy Stroud formerly N4WUH now KN4MQ

Up-Grade Exam??

by Bruce Chase, N4UOD

Ready for your next upgrade exam? Okay, take out one sheet of paper and answer the following question. (This is not a timed test).

What is MARS?

a) a nearby red planet
b) a mythological God of war
c) the Military Affiliate Radio System
d) all of the above

For all of you that answered "d", the correct response, call our VE chairman at once, anytime, day or night. [Ed. Note: I don't just get even ... I retaliate excessively!] Well, we don't want to be ***too*** tough, so if you chose either c or d, congratulations.

If you didn't get the right answer, or would like to learn more information about the Military Affiliate Radio Service (MARS), read on.

MARS is an organization of licensed hams working with military stations worldwide, who are interested in military communications and electronics. MARS creates interest and furnishes a means of training members in military communications procedures. It provides a potential reserve of trained radio operators to provide auxiliary communications for military, civil, and/or disaster officials during periods of emergency communications on a local, national, and international basis. MARS provides a volunteer manned communication system for handling traffic for US Armed Forces and authorized US government civilian personnel stationed throughout the world. Finally, it offers training designed to stimulate interest in military communications and electronics oriented career fields.

MARS, while a Department of Defense directed program, is established as a service managed and operated program. Thus, we have ARMY, NAVY-Marine, and Air Force MARS programs. It has official status, is assigned missions and functions, and is authorized the wide use of assigned military radio frequencies. There is usually a MARS station located on military installations in the US and throughout the world, and

the benefits provided by MARS to military personnel are well known throughout the military community. There is no doubt that one of the services has a MARS program which will interest you.

Not only does MARS offer expanded frequencies (most MARS frequencies are just above the amateur frequencies, and many can be reached with little or no modification to normal amateur rigs), but also offers an access to new skills and capabilities. Extensive courses in communication and electronics subjects are free to all MARS members. MARS HF voice privileges are authorized for all MARS licensed operators, regardless of their amateur class. Surplus military and government communications equipment is sometimes made available to members.

Interested in more information about MARS or how to get your own MARS call sign? Give one of the many local MARS members a call, and they'll be happy to share information and MARS experiences with you. Some of the RARS MARS (?) members that you might try are:

Ronnie, WA4MJF; Ed, WA2MYZ; Matt, KB2ACE; Bert, W4FMN; and myself (Bruce), N4UOD.

MARS is another interesting facet of our hobby that you just may want to know more about!

73, N4UOD

Who Was That Man?

Several folks have spotted a tall, slender, silent man sitting or standing near the rear of the room during recent RARS meetings. There is a warm handshake waiting for all who take to time to say hello. You may not have recognized him as Bruce Eggers WA9NEW because Bruce used to make a little more noise than he has lately. The effects of a stroke can change your life.

Happily, Bruce is working his way back to noisey partisipation one word at a time. He is listening and rebuilding his spoken vocabulary. Long-time members may remember that Bruce was the melodious voice of RARS, serving as president for four years. Now is the time for RARS to do a lot of talking to Bruce. Pat Eggers encourages all to stop by the home QTH in Garner. A visit gives Bruce a chance to enjoy your company without having to do a lot of walking. Please call Pat at 779-0266 and make plans to stop by.

According to Guinness...

Most Assiduous Radio Ham

"Richard C. Spenceley (d. July 30, 1982) of KV4AA at St. Thomas, US Virgin Islands built his contacts (QSO's) to a record level of 48,100 in 365 days in 1978." [Ed Comment: That works out to an average of ***only*** 132 contacts per day. Surely someone in RARS could challenge that record!]

Morse Code

"The highest recorded speed at which anyone has received Morse code is 75.2 wpm - over 17 symbols per second. This was achieved by Ted R. McElroy (US) in a tournament at Asheville, NC, July 2, 1939. The highest speed recorded for hand key transmitting is 175 symbols per minute by Harry A. Turner of the US Army Signal Corps at Camp Crowder, MO. Nov 9, 1942."

Guinness Book of World Records, 1988 Edition

Reminder: Dues

Summer is a busy time of year for all of us. You may have missed the announcement and convenient postage paid envelope in last month's Exciter. Take a moment to fill in the membership survey (included in the center of the Exciter) and write your dues cheque to RARS ($10.00 per year for you or $15.00 for you and family). Your completed survey will help RARS to better serve the interests of the membership. Don't wait, do it now! Thanks.

August Program:

What is a repeater and how does it work? Ask Jeff Parker, WA1WXL and Chuk Gleason, KB4MDZ who will present this month's program on the design and configuration of repeaters. As a bonus, Jeff and Chuk will have available the Motorola VHF./UHF test monitor to check and evaluate your HT. Don't leave home without it!

Meet the RARS 2-Meter Repeater

It's a conduit. It's a party line. It's a bulletin board. It's a help desk. It's the RARS two-meter repeater! It has been alternately praised and panned by those who use it. It is the center of controversy over proposals to improve it. But stop and think. What do you really know about it?

A little history

The early seventies can be characterized as a revolutionary time for the use of FM repeaters in amateur radio. In Raleigh, amateurs pieced together the first RARS 146.04/64 repeater from vintage 1955 surplus railroad radio equipment. Initial operation of the machine took place with a split site configuration installed at the homes of Ed Alderman,WA4PEN and Lee Johnson, K4SNA. The receiver's audio was routed to the transmitter by field telephone wire stapled into the trees separating their two homesteads. After suitable reliability testing and the acquisition of tower space, (thanks to Cablevision of Raleigh) this new repeater was moved to the current Bayleaf site using separate antennas for transmit and receive.

In 1973 a repeater was constructed from units made locally by Mackay Communications. This solid state configuration was to replace the Motorola tube equipment and serve until the present equipment was installed nearly a decade ago.

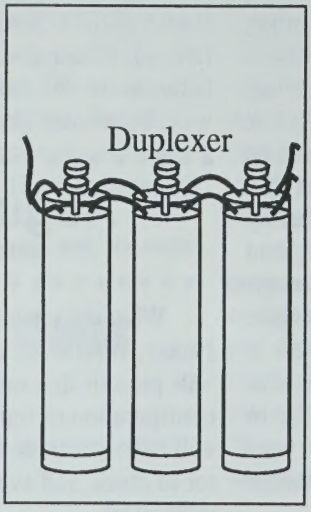
In the early eighties, components for a new repeater, also designed and built by local hands, were purchased from Aerotron, Inc., a Raleigh-based, two-way land mobile radio manufacturer. Unlike previous efforts, this equipment was purchased new for exclusive use as an amateur repeater. The value of the RARS two meter repeater as a social glue for the membership was established.

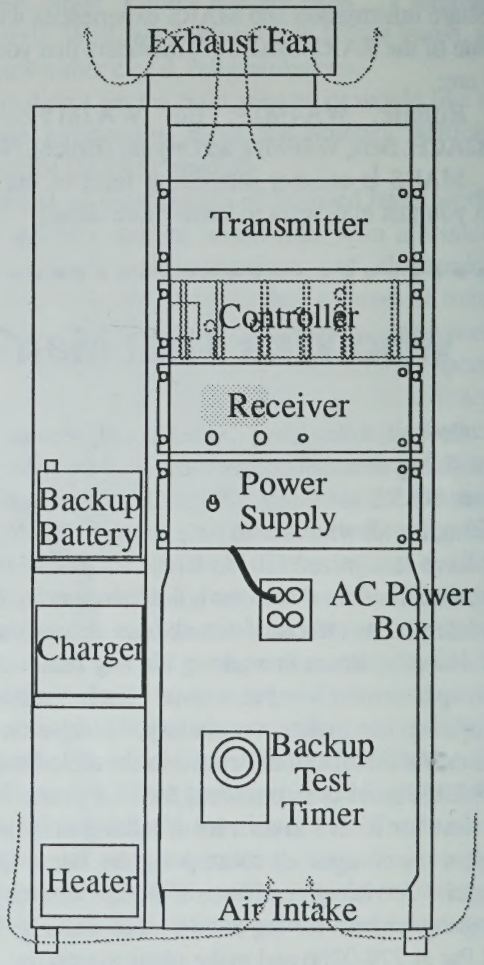
The 146.04/64 repeater Today

The RARS repeater is really a communications system made up of rf and non-rf subsystems. For the most part, the current repeater has not changed significantly since it was put into service.

Installation

The repeater cabinet and a separate enclosure for the duplexer sits outside of the equipment building at the Bayleaf site. The repeater cabinet is moisture resistant enclosure with fresh (but often moist) air cooling . Cooling air enters from the bottom air intake vent and





is pulled upward by convection and a top exhaust fan. Although sealed against rain, the cabinet does not filter out humidity. A thermostatically controlled heater provides temperature stability during the winter months of the year.

RF components

The Aerotron MPAC transmitter and receiver are separately packaged units for maximum isolation and flexibility of configuration. The internal mechanical design consists of plug-in boards for quick replacement in the event of a circuit failure. Frequency stability is achieved by the use of temperature compensated crystal oscillators (TCXO) instead of ovenized crystals or crystals alone for frequency generation. The transmitter output power is in excess of the rated 60 Watts.

Antenna and Duplexer

Near the top of the tower at Bayleaf resides a Station Master antenna providing approximately 6 dB of gain. Newly installed Andrew 7/8 inch rigid transmission line couples the antenna to the duplexer approximately 400 feet below. Six-cavities provide isolation between the transmitter and receiver to allow the use of a single antenna and feedline for both. Signals from the antenna on 146.04 MHz pass through the cavities to reach the receiver while a notch filter rejects the 60 plus watts of power at 146.64 MHz that would otherwise damage the receiver. The transmit signal passes through its cavities to the antenna.

Control

The role of the controller is almost transparent to the casual repeater user. When the receiver detects a signal, the squelch opens and the received audio is routed through the controller to the audio input to the transmitter. The opening of the squelch switches the transmitter into the transmit mode. FCC requirements and the desire for additional operating control features create a need for a repeater controller separate from the transmitter and receiver components. The controller monitors receive audio for DTMF tone signaling commands. A designated control operator can set two levels of receiver squelch, the repeater transmitter hang time delay, and take the repeater off the air. All RARS members have access to the autopatch control codes to make non-business telephone calls.

Power

Power at the site is supplied to the repeater at 117 VAC. Under normal operation, the Aerotron 1073 power supply provides regulated 9 and 13 Volts to the transmitter and receiver sections of the machine. An internal power changeover circuit board monitors the AC line and switches to battery operation when AC power is lost. While on battery power, the board inserts an intermittent warning tone to the transmitter audio to signal battery operation.

An external charger keeps the 60 Amp/hour battery under constant trickle charge. A new feature of the power system is the backup test timer. The purpose of the timer is to daily turn off the AC line and force the repeater to operate briefly under battery power. This provides both a way to cycle the battery and indicate its condition.

The Future

Recent problems with the machine has prompted club-wide speculation about the future of the current hardware. Among the issues at hand is the proposed purchase of a new, feature filled repeater controller (See related article elsewhere in this issue).

The rf components of the repeater will not last forever. However, the consensus of opinion among Two-meter SIG members is that the current hardware will benifefit from the temperature controlled envirnment of the equipment building at the site. When the Aerotron package was installed, other incompatible services had priority over the space. It is now not a problem. From there, informed decisions about repair or replacement can be made. The RARS 146.04/64 MHz repeater is the flagship repeater of the club. If you have a suggestion or request concerning the RARS Two-Meter Repeater, get involved in the Two-Meter Special Interest Group. Meetings are held the last Tuesday of the month at the YMCA. Don't sit on the sidelines and complain. Jump in and win!

de KM4BU

Guest Editorial:

It Seems to Me

We hams are a notorious lot. We are renowned for our incessant desire to communicate. And we do communicate. We use keys and microphones. We do it at home, at work, and at all points in between. We use HTs, mobiles, telephones, mobile phones, cellular units, computers, and even the written word (*The Exciter, QST, 73*). We even go to a 7:30 PM club meeting at 6:30-7:00 so that we can hold eyeball QSOs (communicate) with our friends.

We also have a reputation for doing the greatest amount of communication for the smallest capital outlay. For some of us old codgers, the "cheapskate" appearance may be a relic from the Great Depression of the thirties. For others, it may simply be a game we play to get "the most bang for the buck". Realistically, many hams simply do not have enough money to invest in the many facets of ham radio in which they would like to participate. Many make the "lets's buy two Fords instead of one Lincoln" choice in ham radio so that they can do HF and VHF/UHF or packet or teletype or whatever. The fact is, we all have to make choices.

As a club we have to make choices too. Much of the club money is used to support our communications needs. For example, we use our newsletter, repeater, and club meeting night for club sponsored communication. We communicate at other club sponsored events such as the annual club picnic, the club birthday party and the RARSFEST social, but communications may not be its prime purpose. We do have to pay for the newsletter, repeater and meeting place rent. In fact, the cost of *The Exciter* exceeds the amount of membership dues collected. The meeting place rent now exceeds $1000.00 per year (considerably more than the annual $75.00 contribution we made to the church where we formerly met). And the repeater does cost something to maintain and operate. Last year, an new feedline and its installation cost about $2, 200.00. The repeater is not a once per month event, but a 365 day per year communication facility.

It would seem that if all of our dues almost pays the cost of *The Exciter*, that some one must help find ways to pay for meeting place rent, our social and service events, our repeater and other incidentals. If these are all to be supported by the RARSFEST proceeds, we need a lot of help to make it a profitable event!!! Help!

Ed WA4PEN.

VHF/UHF SIG

The regular monthly meeting of the VHF-UHF Special Interest Group was held on Thursday, the 12th of July 1990. Present were AB4FY, AB40Z, K4SAN, KB4EXL, KB4GFR, KB4MDZ,KB4VYPKM4BU, KM4UT, KN4AK, N4VQN, WA4LHE, WA4MJF, WA4OLH, and WA4PEN.

General topics of the meeting included discussions of the funding for the ACC-80 repeater controller for the 2-meter repeater and "getting out the vote". The crystal for the new GE receiver for the 220 repeater has been ordered. The 444.50 MHz repeater is working better now that the new antenna has been installed (Our thanks to Charlie, WA4WTX for the donation of that antenna). Another site is being evaluated for the 444.50 MHz repeater to increase its elevation. Planning for a 6-meter remote base station on 52.525 MHz (FM) to be installed at the Dean-Witter site was discussed. Possible links to the 220 MHz and 444.50 MHz repeaters are being considered.

VHF-FM homebrew projects were discussed to encourage low cost access to the repeaters operating above 2 meters.

Things to do: help Chet, KB4LAF on circuit board prototypes for the VHF and UHF repeater controllers; research additional repeater sites; assist with the moving of a 5 x 8 foot reel of coax from Apex to Bayleaf; work to improve the power supplies for the VIC-20 controllers to be resistant to power fluxuation;

A commitee is needed to formulate a 3-year plan for the RARS repeater system(s) for presentation to the

RALEIGH AMATEUR RADIO SOCIETY MEMBERSHIP APPLICATION

Please PRINT. Fill in and/or check each block. Fields in caps are optional.

Name _____ SPOUSE'S NAME _____

Street _____ MONTH/DAY OF BIRTH ____/____

City _____ State _____ Zip _____

Telephone: Home _____ WORK _____

EMPLOYER _____ OCCUPATION _____

2. Call _____ License class ___ First licensed in (if known) _____

ARRL member Yes ___ No ___ Life ___; Other hobbies _____

3. Amateur activities and mode(s) of operation Note! * which S I G ?

AM	___	Packet	___	Community service	_____	Nets/Traffic	___
AMTOR	___	RTTY	___	Contesting	_____	Rag chewing	___
CW	___	SSB	___	Dx 'ing	_____	Special events	_____
FM	___	SSTV	___	Equipment build	_____	*S I G Member	_____
Mobile	___	Other	___	Field day	_____	Other	_____

4. Pse circle bands you use: 160 80 75 40 20 10 6 2 Warc ___ Other ___

5. Do you own or have acess to:

Emergency power generator ___ Base: HF ___ VHF ___ Portable: HF___ VHF ___

Learning code	___	Upgrading license	___	Traffic and net operation	___
Transportation	___	Rig problems	___	Improving code speed	___
Antenna problem	___	ARRL membership	___	Obtaining a license	___
TVI/RFI problem	___	Other problem(s)	_____		

7. All RARS members are encouraged to participate in society projects. Please mark those areas where you would be willing to assist.

Annual hamfest	___	Licensing classes	___	ARRL info/activities	___
Field day	___	Contests/awards	___	Forming new S I G's	___
RARS S I G' s	___	Rars social events	___	Community service	___
RARS newsletter	___	Ham radio publicty	___	Construction projects	___
Telephone calls	___	Antenna problems	___	Newsletter advertising	___
Financial/Legal	___	Assoc. Chairperson	___	Other_____	

8. Additional comments: Please use reverse side of application.

Date:_____ Signature:_____

---------- Dues Schedule ----------

Type	Fee	Applicable to	Period
Full	$ 10.00/yr	Novice -> extra	1 Jul to 30 Jun of following year
Associate	$ 5.00/yr	Non-licensed	1 Jul to 30 Jun of following year
2nd/Family	one half applicable rate		1 Jul to 30 Jun of following year
Partial yr	$ 1.00/Month, begining		1 Oct to 1 Jun of following year

Send dues to: RARS, C/O Robert P. Buehlmann, 1314 Chaney Rd, Raleigh NC 27606
R3 06:39

board at the September meeting. Will you help?

Topics were brought forward for future meetings. Door prizes were awarded to N4VQN, KC4GFR (cookbooks), WA4LHE, (burpless cucumbers), and WA4PEN (VHF frequency combiner). The social was held and a choclate eclair cake and cherry cobbler cake were "devoured".

The next meeting will be on the 9th of August 1990.

73 de Sherry, KB4EXL

Road Trip: Gaithersburg

Fran Beckette, N4SDQ and Lynn Pitegoff, KC4NJB are organizing the third annual "James Gang" (so named for your RARS BBS sysop KA5IEC, James Martin) trip to the Gaithersburg Maryland hamfest on Sunday September 9th. The Gaithersburg Hamfest is an amazing one day affair which may be the largest ham radio swap meet on the east coast. (its larger than Shelby!).

The trip will include a visit to the Smithsonian museum on Saturday September 8th and stops for interesting ethnic dining not available in Raleigh. If you are interested in joining, the "Krewe" on this year's road trip contact Fran (781-6592) or Lynn (787-1111) or leave a message for Fran on the RARS BBS. (note: this is not a RARS sponsored activity)

SWR Grease

My friend told a story about the time he saw a crowd of curious on-lookers outside a shop in the Golden Days of CB radio. What could be causing the commotion? He stopped and found a fellow selling "SWR Grease" from the back of his truck.

"Smear the grease on your mobile whip antenna", he told the on-lookers "and your SWR will instantly drop to 1.1:1". He said he should have bought some and tried it on histhree -element beam, but he had to finish paying off his purchase of the Brooklyn Bridge first.

No matter where you go, there you are!

WEBERWARE 1.0 NOW AVAILABLE

Weberware 1.0 Imaging Software Now Available To Process WO-18 Pictures

Beta testing of Weberware 1.0 (WW 1.0) is complete their testing and it is now released for general distribution. This unique package made its debut at the Dayton Hamvention last week. Many a radio satellite enthusiast was thrilled as an actual picture captured from WEBERSAT-OSCAR-18 (WO-18) was processed on an IBM PC as they watched. Chris Williams (WA3PSD) of Weber State University (WSU) said that although the early pictures from WO-18 were perhaps not all that interesting, now that the ground controllers at WSU have a better understand of this MICROSAT's attitude motion, they have modified the on-board software so that more pictures of the earth are now being snapped. In addition, the software now maintains better control the CCD camera iris settings and settling time. Through more operational experience, many more exciting pictures of the earth are expected soon.

Weberware 1.0 is designed to work on IBM PC clones which support EGA or VGA graphics. WO-18 is constantly sending picture data and the imaging data can be easily collected with a PSK modem. For further information about Weberware 1.0, contact the AMSAT-NA software exchange at (301) 589-6062.

AMSAT NEWS
SERVICE BULLETIN 125.02
FROM AMSAT HQ
SILVER SPRING, MD
MAY 5, 1990

Ladies of RARS

Anita KC4AQB and Sherry KB4EXL would like to invite the Ladies of RARS, (with or without call sign) to get together for a dinner meeting. Time and date are in the planning stages. If you are interested please contace either Anita 846-7455 or Sherry KB4EXL 266-4434.

Real Ham Radio?

I do not believe there was any FCC in 1928, but there was something called, I think, the Federal Radio Commission. They assigned frequencies for the various classes of operations. Ham licenses were issued by the department of Commerce. My first one was signed by the then secretary of that department, a Mr. Herbert Hoover.

Naturally there was no requirement for approval testing of apparatus because nearly all of it was home made. There were even some spark transmitters still on the air, although I do not think any of them were Hams.

Among the many theories about the origin of the name "Ham", one relates to the crude nature of some amateur apparatus. At that time the transmitter, and frequently the receiver too were breadboards. This meant that operating was something more than twisting dials. Sometimes you routinely altered the circuit while in the middle of a QSO!

Vacuum tubes suitable for transmitting were limited to power audio types such as the 210. Also there were some Western Electric types which actually permitted going all the way to high power (200 watts). These were usually reclaimed power amplifiers from movie theater sound systems.

My own early station had a power supply which used electrolytic rectifiers. These were home made. Each rectifier was housed in a glass jar and consisted of a pair of aluminum plates suspended in a solution of baking soda. At night you could see scintillation on the plates when the power was on. It was frequently necessary to replace water lost by gassing or evaporation. Also the soda would creep up the sides of the plates forming a white encrustation on the insulators separating the plates (pieces of wood soaked in paraffin). The appearance was similar to that of the battery terminals of your auto storage battery. This certainly detracted from the appearance of the outfit. Fortunately, the word "crummy" had not yet been coined.

Some Amateurs went to great lengths to obtain the reasonably high voltage output voltage from their home built power supplies. Mostly the only available transformers were salvaged from old receivers. The secondary windings yielded something on the order of 250 volts either side of the center tap. So if a multi-winding power transformer with all the secondary windings connected in series was used, it was usually possible to scrape up about 550 volts A.C. This could be applied to a bridge rectifier to give about 600+ volts D.C ... that is until you pressed the key.

The regulation was very poor, resulting in odd sounding weepy signals when keying. Modern programmers use this same principle today for the sound effects in video games. It was possible to get some really high (and lethal) voltage by using a doubler. This, of course, made the regulation even worse resulting in even more severe weeping signals.

The ultimate circuit was one in which the transformer windings were arranged as an auto transformer. This was an important improvement because it added 120 volts from the power line (220 volts when doubled). It also made the whole shebang very dangerous and subject to self destruction if any part of the rig was accidently grounded. The self destruction sometimes included the operator.

Capacitors were hard to come by. The resulting inadequate filtering meant that the power supply output often had a fairly high degree of ripple. That is the reason why Hams always give r-s-T (tone) reports. The T report is almost useless in these days of almost 100% clean signals. Personally, I am in favor of dropping it. Back then, however, there were not many really clean signals.

Come to think of it, the RST system was preceded by a descriptive method relating back to transmitters powered by batteries which, of course, yielded a clean or DC signal. I never met a ham who had such a battery powered rig. I did, however, know of one who snaked a wire out the window through some overhanging tree branches to connect to a trolley wire. He had himself 600 volts of pretty clean DC, but his output always dropped off somewhat when a street car passed the house.

So the accepted method of reporting included expressions such as "PDC" (pure DC), or worse, "RAC" (raw AC).

Not everyone used filtered power supplies. Some Hams used transmitters in which AC was applied directly to two tubes in push pull.

see Real Ham Radio? Page 14

"...BA-505 Battery (not available)"

Words like the above have deterred some radio amateurs from purchasing or trying to use military surplus or older vacuum tube portable equipment, because the special battery required is either unavailable or horribly expensive. But this should not be a barrier to trying out that "GI-Joe" walkie-talkie, "James Bond" false bottom suitcase receiver, or "Atomic Cafe" radiacmeter (everybody needs a radiacmeter!) collecting dust in your garage-museum.

Just remember that all multi-volt batteries are made up from stacks of cells of 1.5, 1.4, or 1.35 volts each, depending on the type or "chemistry", and YOU can make suitable replacement batteries yourself with a little cardboard, masking tape, wire and the right number of the right size cells. Find out the total voltage your device requires for the various batteries (often separate low-voltage, high-current "filament" battery and high-voltage, low-current "plate" battery, or perhaps a battery with several taps for different voltages from the same package), and divide these voltages by 1.5, 1.4, or 1.35. One of these values should produce a whole number (or very close), and tell you how many cells to buy. 1.5 volt cells may be supplied by common Leclance, better manganese-alkaline, or tiny silver-oxide cells, where 1.35 or 1.4 volts indicates one of the two types of mercury cells available in a variety of sizes.

You must either know the dimensions of the original battery you are replacing, or take measurements of the space where the battery goes inside the radio or instrument to determine what size cells to purchase. If you have a sample of the original battery, you can take it apart enough to see what size cell the manufacturer used, otherwise just select the biggest size that will fit after stacking and wrapping. Masking tape is good for wrapping the cells. Wrap very tight if surface contact is to be the electrical connection between cells (small cells may be damaged by trying to solder them, so use caution). Thin cardboard may be folded to form a box, rolled to form a tube, or folded-up to make a spacer if necessary. Brass paper fasteners from the office supply store are a good source of brass strips and buttons for making external contacts for your battery package, or you may salvage the special connector or snaps from old batteries to make the new one.

If high-voltage is needed and space permits, the 9 volt (006P) batteries could be taped and soldered together to quickly build up voltage (here's where you can really use that collection of Radio Shack free battery cards!). Ten such batteries make 90 volts, and may well cost less than a 90 volt "B" battery. Also watch for bargains on quantities of the 3 volt lithium cells from sellers of surplus computer parts. Batteries and cells come in a wide variety of sizes and shapes, just check the pages of charts in most industrial electronics catalogs, or visit a well stocked wholesale parts store. Though many old types have become "obsolete" and some special military sizes were never available for sale to the public, there should be no reason why you can't make a serviceable battery pack to get that vintage portable set operating again. They are a lot more fun to have when they really work too!

Ron Johnson, WA5RON, 12700 Silver Creek, Austin, TX 78727

Homebrew SIG

The July Homebrew Sig meeting was held on July 12 at AB4OZ/KC4NJB's QTH. Thanks to Alan and Lynn for the fine hospitality. Ed, WA4PEN gave a presentation on vertical gain antennas for the 440 MHz band. Many thanks Ed; and hope we see you again at future Homebrew SIG meetings.

The Augest meeting of the SIG will be at 7:30 pm on Wednesday August 8th at the home of Jim Smith, AB4TD. Jim will fill us in on the use of test equipment, particularly the oscilloscope. Jim lives at 11017 Mason Ridge Road. which is the first corner on the right off Honeycutt Road about 1/3 of a mile south of its intersection with Brassfield Road near Falls Lake. His phone number is 846-0525 and there will be talk in on 146.64. See you there!

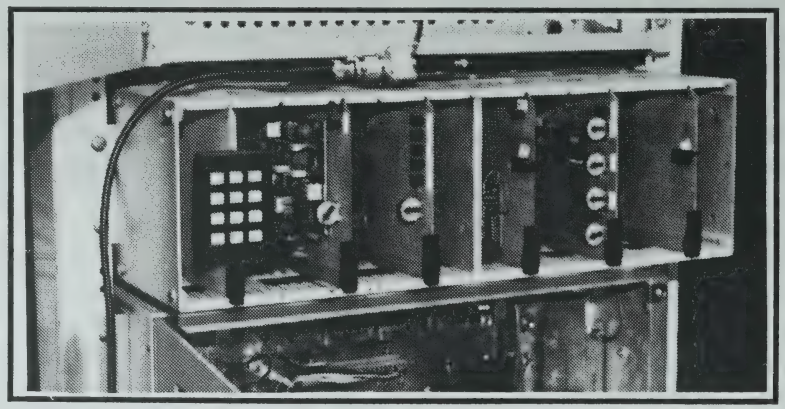
Tom McKee, K4ZAD

The Repeater Controller /Autodialer Issue

There appears to be a lot of question within the rank and file membership about the issue of the repeater controller and the $7 speed dial "vote" appearing in the last month's Exciter.

An editorial of almost 2 years ago suggested we make some changes in the repeater, and perhaps I have been remiss in not keeping the members up to date on what has been going on. So allow me to define the issue in question.

The issue is that of the 2 meter repeater controller. Technically, this device does exactly as its name implies. It controls the repeater transmitter. The FCC requires that all repeaters have "remote control" capability (other than its primary input frequency). This is to allow "control operators" to shut it down in the event its transmitter gets locked on, or if some idiot starts doing something that we as a club, do not want re-broadcast over our repeater. The controller on the '64 repeater accomplishes that required function and one other: the autopatch.



The technical problem we face is that our controller was hand built about 10 years ago. There are no spares for the circuit boards. The repeater (and controller) has been outdoors, exposed to the elements, and putting it mildly, things are pretty corroded. While the controller does still work, changing anything (even the auto-patch access codes) can be a high-risk effort–with the state of the equipment, we're afraid to touch anything! As a matter of fact, the selection of the auto-patch code we now use was really our third choice–the other two simply could not be made to work! Although some improvement has been made since last year, we have come to expect a higher degree of reliability than the present controller, in its age and condition, can provide (especially in times like the north Raleigh tornado). We need to replace it BEFORE it fails!

Technical issues aside, there is the "prestige"issue. As controllers go, ours is about as "plain Jane" as you can get. In terms of features & technology, the RARS repeater is still in the "stone age". Take a listen to other repeaters (locally, the 147.225 MHz machine). Their controllers offer MUCH, MUCH more in terms of features. We tout RARS as the "Premier Radio Club in NC". Yet our repeater (our "flagship station", if you will) is a relic, offering embarrassingly little.

Some of the features available with commercial repeater controllers include a "courtesy beep", synthesized or digitized voices programmed to announce time temperature, local meeting times–just about anything desired. Touch tone controlled checks of YOUR frequency and deviation, remote telemetry (status of the repeater & back-up battery), reverse autopatch and speed dialing (instead of having to dial the access code and 7 digits for your home or whatever you dial a 2 or 3 digit code, and the controller then dials the entire string for you). Additionally, some of the more advanced controllers offer the ability to link and to control other repeaters—they are capable of growth.

There are many more features available too—but the key issue is that these are computerized controllers, and the specific "feature set" can be selected primarily through software (yes, we do have the expertize within RARS to develop out own controller–but who would devote the time? Who would lay out the circuit boards? Who would environmentally test it? What do we do if it didn't work?! Why take the risk in reinventing the wheel?)

The problem is that this commercial technology

does not come cheap. The RARS board of directors has been struggling with this issue for over 2 years now. Proposals have been made, reviewed, sent back to "committee", and remade. What is being proposed is a high quality, state of the art controller, built by a reputable firm. It is the consensus of those individuals who undertook the task of researching the market that it is the best value for features, performance, reliability, and track record of the company producing it. The company will even replace it if it is damaged by a lightning strike during the year warranty period.

A presentation was made at the May board meeting to bring the issue before the general meeting for funds approval to purchase the controller (cost: approximately $3,000), and a vote was taken. It failed by 1 vote

Unlike the Durham FM Association, RARS is a multi-interest club. There are members in RARS who don't operate on 2 Meters. This high-tech controller (and the money spent for it) would do nothing for them, and therein lies the problem.)

People who feel VERY strongly about the controller suggested that perhaps rather than have the general membership pay for this device, we could offer a feature "for sale". The monies obtained from this sale would greatly offset the cost of the new controller. In effect, those who want the new controller would contribute part of the money (in addition to dues) to pay for it.

Another aspect of this approach would be the elimination of any charges of favoritism in assigning speed dial numbers. There are more members in RARS than speed dial numbers. First come, first served. Money up front—Nobody can accuse anyone of favoritism.

Having addressed the major issues held by some board members, the decision was made to put it to the general membership to vote (with a check made out for $7).

This came about and the 11th hour as far as the exciter went—there simply was not time nor room to put the full explanation of the chronology of the issues in the exciter and get it to press the next day. So here it is. The controller/speed dial issue.

de AA4MY

Invention is often frustrated by convention.

If you would like to support the aquisition of a new, full-featured repeater controller, immediately send your $7 vote to:

Raleigh Amateur Radio Society
C/O Robert P. "Tim" Buehlmann
1314 Chaney Road
Raleigh, NC 27606

All checks will be held until either a sufficient number are received or until the next board meeting. If the membership disapproves, all checks received will be destroyed.

Where'd All The YO's Go?

Interesting to note that while all of the Baltic republics (Lithuania, Latvia and Estonia, formerly UP, UQ, and UR respectively have begun using the LY, YL, and ES prefixes on a regular basis, YO stations (Romania), normally avid DXers, appear to have disappeared from the bands!

Bill, KD3EC
Laurel (MD) LARK Newsletter

Traffic Seen on Packet:

Dear Son,

I'm writing this slow cause I know you can't read fast. We don't live where we did when you left. Your Dad read in the paper where most accidents happen within twenty miles of home, so we moved. I won't be able to send you the address as the last family that lived here took the numbers with them for their next house, so they wouldn't have to change their address.

This place has a washing machine, but it's broke. The first day I put four shirts in it, pulled the chain, and hadn't seen 'em since. It only rained twice this week - three days the first time, and four days the second time.

The coat you wanted me to send you — well your

See Letter Page 15

Real Ham Radio? from page 10

The euphemistic name for such a lash up was a "self rectifying circuit." These transmitters gave out a signal with a distinctive rasping sound (120 cycles). It also spread the signal out somewhat. This was one way of cutting through all that QRM!

On of my transmitters, which I think would have rated at least a T-8 by today's standards used a single 210 tube in a tuned plate - tuned grid circuit. Actually the grid was tuned with a fixed coil which could be adjusted once and for all by pushing the turns until a configuration was found such that oscillation could be sustained throughout the band. This meant you had a single control transmitter since only the plate circuit tuning knob needed to be adjusted when changing frequency.

To milk every last ounce of power from a tube it was S.O.P. to load it to the point where a red spot developed on the plate if the key was held down for more than a few seconds. If you held the key down too long, the red spot turned to white, and then — well, never mind. While the other operator was sending, you would yank the tube out of it's socket and put it on the window sill to cool, replacing it with a second tube which had rested for a while. (You probably think that the expression "hot hands" is a basket-ball term, but it really meant something else back then!)

Perhaps you also think that this practice resulted in a frequency change whenever a tube was substituted. Well, it did, but not too much. Thanks to the "wide receivers" of the day, he other operator could usually find you with a little re-tuning.

AM phone was allowed at the high end of the 80 meter band. For the one tube transmitter there was a great scheme called "loop modulation." This system used a Western Electric carbon mic obtained "through channels" but originating from the telephone company. The mic was connected to several turns of wire which were wound onto the transmitter grid or plate coil. The vibration in mic resistance modulated the transmitter by absorbing more or less power from the carrier as you spoke (or yelled) into it.

This was REALLY HAM RADIO!

Frequency modulation as well as amplitude modulation took place when loop modulation was used and there were all sorts of spurious sidebands generated, which were easily heard on the neighbor's broadcast receiver. The tighter the coupling, the more the modulation. However, as the coupling was made tighter and tighter, a point was eventually reached where the innards of the carbon mic suddenly became fused by too much RF. Then it was back to CW (... not to mention back to the telephone company)!

Tnx, Charles Finnigan, NE4I, Editor, Keyed Up
Lake Monroe (FL) Amateur Radio Society

Picnic Time!

No matter that it's the middle of the summer, it's time to start thinking about the the annual RARS Fall Picnic!

The date is Saturday, October 6th and we'll have games and beer and hot dawgs and hamburgers and lots of covered dish goodies brought by you (I hope).

I'll be getting in touch with you with more details, or give me a call if you'd like to help. 787-1111

Lynn Pitegoff
KC4NJB

NC / SC / VA Hamfest Calendar:

Aug 05	Berryville, VA (great bar-b-que!)
Aug 11-12	High Point, NC
Sep 01-02	Shelby, NC (The gran-daddy of 'em all!)
Sep 15, 16	Virginia Beach, VA (ARRL Roanoke Division Meet)
Sep 22	Spruce Pine, NC
Sep 30	Benson, NC (JARS)
Oct 07	Rock Hill, SC
Oct 14	Maysville, NC
Oct 20	Smithfield, NC (Triangle East ARA)
Nov 11	Concord, NC
Nov 24-25	Greensboro, NC

(Compiled from QST, & SERA Journal ... caveat emptor!)

Letter From Page 13

Aunt Sue said it would be too heavy to send in the mail with them heavy buttons, so we cut them off and put them in the pockets.

We got a bill from the funeral home, said if we didn't make the last payment on Grandma's funeral, up she comes.

About your father - he has a lovely new job. He as over 500 men under him. He's now cutting grass at the cemetery.

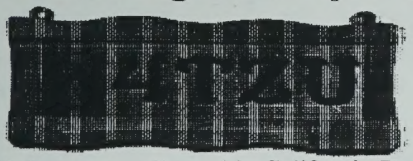
About your sister - she had a baby this morning. I haven't found out whether it is a boy or a girl, so I don't know if you are an aunt or an uncle.

Your Uncle John fell into the whiskey vat. Some men tried to pull him out, but he fought them off & then drowned. We cremated him. He burned for three days.

Three of your friends went off the bridge in a pickup. One was driving, the other two were riding in the back. The driver got out. He rolled the window down and swam to safety. The other two drowned. They couldn't get the tailgate down.

Not much more news this time. Nothing much has happened.

Call Sign Plaque



Display your call on this California Redwood Plaque. It features black letters imprinted on natural redwood. Suitable for indoor and outdoor use, it is also ideal for your family name, your business name, or a child's first name - whatever you wish up to fourteen characters. Four inches high, and 9" to 18" long depending on number of characters. Specify your call or name. Send $14.95 per plaque plus $3.60 for shipping (NC residents must add $0.75 tax per plaque) to:

Campbell House
Dept R-3
PO Box 61168
Raleigh, NC 27661

For Sale

Kenwood TS-520 HF Transceiver, 5 bands (10, 15, 20, 40, and 80 Meters), SSB and CW Modes, 50 to 100 watts rf output (depending on the selected band), 500 Hz CW filter, 6146 tube finals. Solid performer. You supply key and microphone. $300

Kenwood TS-502S 2-meter Transvewrter, connects to the TS-520(s) and TS-820s. Provides SSB and CW modes for 144 to 146 MHz operation. 10 Watts output for SSB and 8 Watts for CW $125

Tinned Copper Braid for station grounding. 3/16" outer diameter when round. 1/4" width when flattened. Can be used outdoors $0.15 per foot or $13.00 for 100 feet. 400 feet available.

Jim Mulligan, N4ODA 779-1997

Wanted: Used 2-meter HT

Contact Bailey Watkins KC4QNQ 772-5452

Mini Quad HQ-1 (6, 10, 15, &20 M) Beam $125
Regency 220 MHz crystal rig installed in a base enclosure w/ps and digital clock. Plus 5 element beam $125
SBE-144 12 channel 2 meter rig. Very clean $85
Regency HR-2B 2-meter rig $65
Viewstar BW-300 antenna tuner. Mint $90

All items available for sale or trade on an H.T. (prefer Icom)

Contact Jeff Keller NX9T 556-0395

Realistic solid state 5-band communications receiver model DX-160. Like New $75

Terry KB4HYF 782-1233

IBM PC –The real thing! 640K, 30meg hard drive, two serial ports, parallel port, game port, CGA monitor, 3.5" and 5.25" diskette drives Plus an **IBM Graphics Printer**. $675 or offer

Contact Walt, KM4BU 481-2856

Amateur Radio -- A National Resource

Raleigh Amateur Radio Society, Inc.
P.O. Box 17124
Raleigh, NC 27619

MR. CHARLES R. LITTLEWOOD K4HF
2005 QUAIL RIDGE ROAD
RALEIGH NC 27609

Next Regular RARS Meeting: Wednesday, August 1, 7:30 PM
Raleigh YMCA , 1601 Hillsborough St.
RARS Nets: Daily @ 8:00 PM on 146.04/64
10 Meter - Tuesdays, 7:00 PM on 28.364 MHz
YL Info Net - Wednesdays, 9:00 PM, 04/64
Technical Information Net - Saturdays, 8:30 PM, 04/64
Code Practice - Mondays & Fridays 9:00 PM, 04/64
RARS Computer Bulletin Board: 781-2530

Events Calendar

Aug 01	Regular RARS Meeting w/ Exams (walk-ins OK)
Aug 08	Homebrew SIG Meeting (see inside for directions).
Aug 09	VHF/UHF SIG Meeting - QTH of WA4MJF, KB4EXL, & KB4VYP- 7:30PM
Aug 11, 12	Eurpoean DX Contest, CW
Aug 11, 12	Hamfest, Highpoint, NC
Aug 15	RARS Advisory Board Meeting - YMCA - 7:00 PM All Members Welcome
Aug 28	Two-Meter Repeater SIG Meeting - YMCA
Sept 1, 2	Hamfest, Shelby, NC
Sept 9	Hamfest, Gaithersburg, MD
Sept 30	Hamfest, Benson, NC